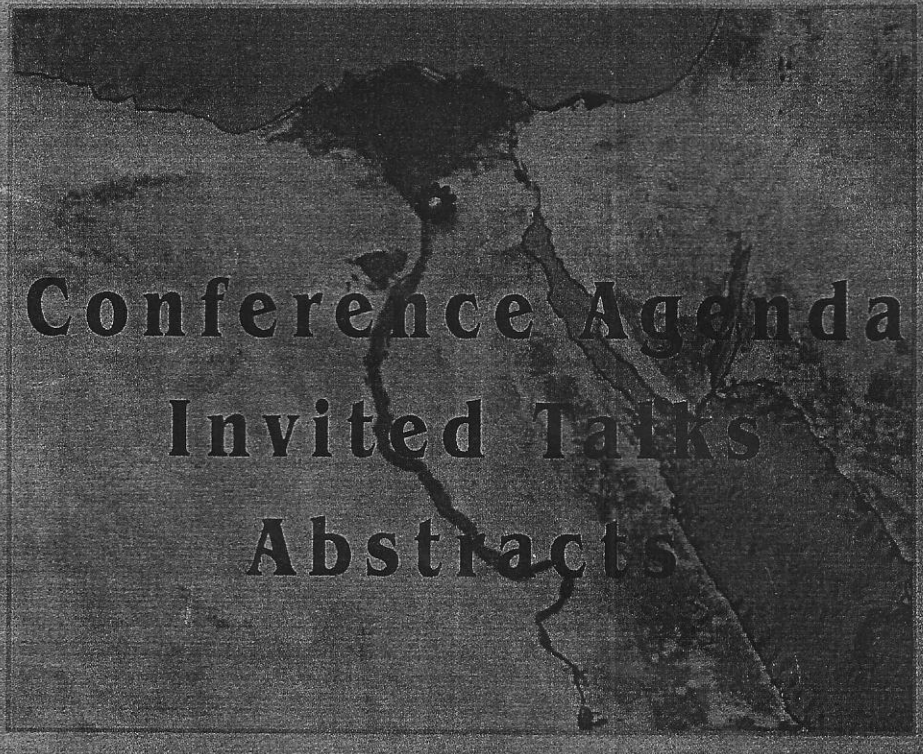
Inter. Conf. on the Geology of the Arab World
Cairo Univ.
GAW 10
المؤتمر الدولي لجيولوجية العالم العربي - جامعة القاهرة

Cairo University
Faculty of Science

THE 10TH INTERNATIONAL CONFERENCE ON THE GEOLOGY OF THE ARAB WORLD (GAW 10)



Conference Agenda
Invited Talks
Abstracts

10-12 April, 2010

Cairo University, Egypt

Invited Talk: Monday 12th April, at 14.00-15.00

Ore Deposits Genesis, Facts and Fancy: with focus on the Stratabound Sedimentary- Hosted Deposits

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This perspective is dedicated to my PhD supervisor, the late Professor Dr. G. Christian Amstutz, of the Mineralogisch – Petrographisches Institut, Universität Heidelberg, Germany (1957 – 2000). He is recognized as a famous pioneer in the study of stratabound sedimentary-hosted ore deposits, previously interpreted as epigenetic deposits formed through replacement processes by hypothetical fluids or solutions, coming from unknown depths.

The problem of the genesis of such deposits has its roots in a symposium on "Ores in Sediments" that took place as a part of the International Sedimentological Congress of 1963.

The meeting adopted the following recommendations:

- The integration of sedimentology in any study of ore deposits in sediments is essential to correct interpretation.
- A study of the role of sedimentary processes, including diagenesis, is an important field in pure, as well as in applied, research on the genesis of mineral deposits.
- The knowledge of sedimentary rocks and processes (in regard to both, the fabric and the geochemical detail) is a prerequisite for the understanding of subsequent metamorphic processes and their possible role in the deformation and reconstitution of mineral deposits and host rocks.

A wealth of further important contributions and conclusions during the last fifty years have thrown light on the details of the processes of ore formation in different environments and of different ages, during different stages of deposition, diagenesis and epidiagenesis.

The recognition of the ore genesis is a fundamental initial step towards consequent exploration and the subsequent steps of the establishment of a mine project, and of industrialization and marketing. Thus, this talk considers the genetic problems (space/time) of different (world-known and Egyptian) stratabound deposits, hosted in different sedimentary sequences or confined to paleoerosion (unconformity) surfaces, and not showing any direct or indirect relations with igneous activities. It addresses and discusses the following related items:

1. The historical evolution of ore genesis theories, particularly the stratabound deposits.

2. The philosophy and approach of thinking towards the construction of a genetic model and the explanation of the ore genesis (observations/interpretations; source/processes), either through deductive reasoning ("top-down approach") or through inductive reasoning ("bottom-up approach").
3. The sequence of logic and systematic scale(s) of observations and data interpretations (i.e. regional field scale, local or mine scale, hand specimen scale, microscopic scale and geochemical scale).
4. The ore geometry and architecture and degree of congruence (fabric characteristics, relations and evolution).
5. The ore-controlling parameters, comprising: the paleotopography and the distribution of paleohighs and paleolows; paleogeography and the distribution pattern of the paleoshorelines, paleoenvironments; paleoclimates; the structural evolution and tectonic setting,....etc.
6. The relevant processes of deposition, diagenesis, catagenesis, post-diagenesis (post-uplifting, telogenesis/supergenesis) and metamorphism.
7. The relevance of using the traditionally and classically used genetic terms: syngenetic, epigenetic, primary, secondary.
8. Examples from the world-known stratabound sedimentary-hosted ore deposits.
9. Examples from the Egyptian stratabound ore deposits.